

**A NEW SUBSPECIES OF *DELIAS CALIBAN* GROSE SMITH, 1897  
(LEPIDOPTERA: PIERIDAE) FROM NORMANBY ISLAND,  
D'ENTRECASTEAUX GROUP, PAPUA NEW GUINEA**

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**Abstract**

A review of *Delias caliban* Grose Smith, 1897, endemic to the D'Entrecasteaux Islands, Milne Bay Province, Papua New Guinea, is presented. Primary type material of nominotypical *D. c. caliban* (TL: Fergusson) and of *D. c. satisbona* Rothschild, 1915 (TL: Goodenough) is illustrated. A new subspecies, *D. c. sycorax* **subsp. n.**, from Normanby Island, is described and illustrated. A lectotype is designated for *D. c. satisbona* Rothschild. Current dangers and difficulties for travellers to the D'Entrecasteaux are briefly discussed.

**Introduction**

The pierine genus *Delias* Hübner, 1819, ranges from Sri Lanka and India in the west to the Solomon Islands, New Caledonia and Vanuatu in the east, attaining its greatest diversity in the mountains of mainland New Guinea. Some 255 species are currently recognised (Müller *et al.* 2013) and the genus has received revisionary – or at least a comprehensive – treatment by a number of authors, notably Talbot (1928-1937), Roepke (1955) and, most recently, Yagishita *et al.* (1993) and Müller *et al.* (2013).

Many *Delias* are moderate to high elevation species, including *D. caliban* Grose Smith, 1897, described from Fergusson Island in the D'Entrecasteaux group. *Delias caliban* is morphologically very similar to *D. ladas* Grose Smith, 1894, a fact acknowledged by Grose Smith (1897), who nevertheless considered it a distinct taxon: '*D. caliban* is a much larger insect than *D. ladas*; the irrorated yellow basal area on the underside of the posterior wings is a very distinct feature, apart from other differences.' A second *D. caliban* subspecies, *D. c. satisbona* Rothschild, 1915, was described from Goodenough, the adjacent island northwest of Fergusson. Talbot (1937) treated *D. caliban* as a distinct species, while Roepke (1955) listed it as *D. ladas caliban* and offered the opinion 'treated by its author and Talbot as a separate species, but apart from the larger size, the male is identical with *ladas* (Toxopeus ms.)'. *Delias ladas*, to which *D. caliban* does bear some superficial resemblance, is widespread on the New Guinea mainland. Both Yagishita *et al.* (1993) and Parsons (1998) treated *D. caliban* as a distinct species; it differs from all subspecies of *D. ladas* in its larger size, yellow basal area on the underside of the hind wing and the yellow submarginal spots on the underside of the female hind wing (Chris Davenport in litt.). Müller *et al.* (2013) found less than 1% difference in CO1 gene sequence between *D. caliban* and *D. ladas* (Chris Müller in litt.).

It is widely believed that only two male specimens of nominotypical *D. c. caliban* exist (Grose Smith 1897, Parsons 1998). However, the Natural

History Museum (BMNH) in London actually has three males collected by A.S. Meek; the holotype and one paratype from the Rothschild collection taken in 1894 (see below) and a third male, which was also collected by Meek; it bears no date, but since it is ex-H H Druce and ex-Joicey was almost certainly collected at the same time as the other two. Although not illustrated by Grose Smith when he described it, *D. caliban* was illustrated by Grose Smith and Kirby (1897: p. 26, pl. 'Papilionidae. Pierinae. *Delias* VII', figs 6-7); the painting on the plate accurately depicts the upper surface, although the under surface basal area is a rather bright lemon-yellow and extensive on the painting. In both historical and fresh specimens in the BMNH the yellow may appear to be tinged greenish, especially when the dusting of yellow scales is light; the second of the two Rothschild collection male specimens (the original description noted 'two examples were in the collection' [Grose Smith, 1897]) has much less basal yellow. Grose Smith and Kirby's illustration also has an exaggerated 'finger' of dark border colour intruding into the underside forewing white basal area.



**Figs 1-3.** *Delias caliban caliban* holotype male: (1) labels; (2) upper surface; (3) under surface.

Notwithstanding some artistic licence, this illustration is clearly the specimen also labelled as the 'Type' in what is almost certainly Grose Smith's own handwriting (Fig. 1) and is taken to be the holotype. The example of his handwriting provided by Horn *et al.* (1990) is not helpful, since it does not include examples of most of the letters used on the *caliban* label; it is also noted that Horn *et al.* (1990: 148, 466 [the latter with incorrect initials])

used a hyphenated form of Grose Smith's name, a mistake made by very many authors but never by Grose Smith himself. The *caliban* label (Fig. 1) does not hyphenate Grose Smith's name.

The current edition of the ICZN (1999) Code requires a holotype to be designated in the written description and that, if this is not the case, a lectotype should be designated. However, it is rather enigmatic – or at least open to a measure of interpretation – on the subject of type material prior to 2000; Recommendation 73F declares that 'where no holotype or syntype was fixed for a nominal species-group taxon established before 2000, and when it is possible that the nominal species-group taxon was based on more than one specimen, an author should proceed as though syntypes may exist and, where appropriate, should designate a lectotype rather than assume a holotype'. The word 'assume' is taken here to be important: although no holotype was formally designated in the case of nominotypical *D. c. caliban* in Grose Smith's written description, his illustration very obviously refers to the specimen which bears his own handwritten 'Type' label. Arguably, there is no 'assumption' to be made – this is the specimen which Grose Smith clearly considered to be the name-bearing Type and it is taken here to be a holotype; under these circumstances it is arguably unnecessary and arrogant to override the clear action and intentions of the original author. It is acknowledged that this may not meet with universal approval; it is a potentially sensitive issue and one which might be addressed in time by the ICZN. The second male from the Rothschild collection has been labelled as a paratype.

*Delias caliban satisbona* was described by Rothschild in 1915 and was, like nominotypical *D. c. caliban*, collected by A.S. Meek. It differs fundamentally from nominotypical *D. c. caliban* in the hindwing underside having much reduced greenish yellow scales basally. Rothschild (1915) made no reference to the number of specimens before him, although Parsons (1998) erroneously declared: 'To date, [nominotypical] *caliban* is known by 2 ♂♂ and *satisbona* by 4 ♂♂ and 4 ♀♀'. There are indeed four pairs of *D. c. satisbona* in the Rothschild collection in the BMNH and one of these males is labelled as the 'type', although the word 'type' appears to have been added to the label as an afterthought, probably in a different hand (Fig. 4). However, there are a further 5 ♂♂ and 3 ♀♀ in the main collection, all bearing the same black bordered Goodenough / Meek label as those in the Rothschild collection. Since this series came to the BMNH from the Joicey collection, not the Rothschild collection, identical labelling might be considered unusual, but there is evidence to suggest that when Meek material was received by Rothschild at Tring Museum, it was not unusual for Tring to take a selection of specimens (in the case of what was to become *D. caliban satisbona*, four pairs) and label the remainder before they were passed to dealers for sale. One of the Joicey males carries a further handwritten label: 'D. Satisbona Roths. Det. Roths. Cotype', and a female bears the same 'Cotype' data, but not 'Det. Roths.'. It is possible that Rothschild had access to the Joicey

material and that the whole of this series (nine males and seven females) could be considered syntypic, but the words 'Det. Rothschild' (*i.e.* 'determined [by] Rothschild') leave some doubt as to whether this labelling was done at the time of Rothschild's description, or at some later date. Because there is an element of doubt, the Joicey material is excluded and syntypes are assumed only to include the four pairs in Rothschild's collection.



**Figs 4-8.** *Delias caliban satsibona*: (4) LT ♂, labels; (5) LT ♂, upper surface; (6) LT ♂, under surface; (7) PLT ♀, upper surface; (8), PLT ♀, under surface.

In order to fix current application of the name, a lectotype for *D. c. satisbona*, with the following labels, is hereby designated: (1) printed, black bordered label 'Goodenough Isl[and], 2500-4000 f[ee]t, May 1913. A. S. Meek.'; (2) handwritten '*Delias caliban satisbona* Type Rothschild.'; (3) printed circular, purple bordered label 'LECTOTYPE'; (4) printed, 'LECTOTYPE, *Delias caliban satisbona* Rothschild, 1915, designated by John Tennent, 2017'. Seven paralectotypes (3 ♂♂, 4 ♀♀) are designated with the following labels: (1) printed, black bordered label 'Goodenough Isl[and], 2500-4000 f[ee]t, May 1913. A. S. Meek.'; (2) printed circular, pale blue bordered label 'PARALECTOTYPE'; (3) printed, 'PARALECTOTYPE, *Delias caliban satisbona* Rothschild, 1915, designated by John Tennent, 2017'.

The scarcity of *D. caliban* in museum collections almost certainly reflects complications in reaching the species' habitat due to difficulty of the terrain, land ownership issues and cost, rather than scarcity of the butterfly. Parsons (1998) stated that the known elevational range of *D. caliban* was from about 760 to 1,220 m. The present author has observed *D. caliban* on both Goodenough and Fergusson; Parsons' estimate of altitudinal range is probably quite accurate at the lower end but *D. c. satisbona* occurs at least as high as the summit of 'Oiamadawa'a at 2,160 m on Goodenough. The species appears common on both islands but is not an easy butterfly to catch. Individuals fly deceptively slowly but cover a lot of ground and rarely rest. Specimens (now deposited in BMNH, London) were captured on Goodenough but on Fergusson the butterfly was not seen in six days spent on the summit of 'Oiatabu (Mount Kilkerran) and, although it was seen frequently in the forest lower down the mountain, observations were invariably made from a distance. The female of the nominate race remains unknown.

The author spent five days and nights on the summit of Mount Pabinama on Normanby Island, the most southerly of the three large islands of the D'Entrecasteaux, from where *D. caliban* has not previously been recorded. The species, in an undescribed form, was not uncommon in all habitats above ca 750 m, including the summit of Mount Pabinama. This is described here as a new subspecies.

## New taxon

### *Delias caliban sycorax* subsp. nov.

(Figs 9-14)

*Type material*: (2 ♂♂, 4 ♀♀). *Holotype* ♂, PAPUA NEW GUINEA: Milne Bay Province, Normanby Island, Mount Pabinama, camp three, 842 m, 10°04'50.8 S / 150°59'56.2 E, 3 November 2016, John Tennent (in BMNH). *Paratypes*: 1 ♂, same data as holotype; 1 ♀, Mount Pabinama, below summit, 950-1,000 m, 10°04'43.5 S / 150°00'20.9 E, 3 November 2016, John Tennent; 1 ♀, Mount Pabinama, summit, 1,045 m, 10°04'55.9 S / 150°00'15.1 E, 29 October 2016; 1 ♀, ditto, 1 November 2016, John Tennent; 1 ♀, ditto, 2 November 2016, John Tennent (all in BMNH).



**Figs 9-13.** *Delias caliban sycorax* subsp. n. (9) HT ♂, labels, (10) HT ♂, upper surface; (11) HT ♂, under surface; (12) PT ♀, upper surface; (13) PT ♀, under surface.

**Description.** Male (Figs 10-11) forewing length 34 mm, very similar to other races of *D. caliban*. Upperside: forewing ground colour white, outer third black, basal edge of black border regular (more irregular in nominotypical *caliban*); hind wing white with fine black border (border broader in nominotypical *caliban* and *D. c. satisbona*). Underside: forewing outer half black, with one distinct subapical spot and two smaller yellow streaks

(similar arrangement, but placed slightly further from the margin in nominotypical *caliban* and *D. c. satisbona*; reduced to one spot, vestigial or absent in *D. c. satisbona*); hind wing black, with sulphur yellow basal area extending over almost one third of the wing (yellow scales more dense in nominotypical *caliban*; often significantly reduced or almost absent in *D. c. satisbona*); small but distinct yellow spot in space 6, almost touching margin (spot also distinct, but placed further from margin in nominotypical *caliban*; vestigial or absent in *D. c. satisbona*).



**Fig. 14.** *Delias caliban sycorax* female at rest on leaf, Normanby Island, Mount Pabinama, ca 800 m (photo: David Mitchell).

Female (Figs 12-14) similar to *D. c. satisbona* (the nominotypical *D. c. caliban* female remains unknown). Upside: forewing basal area white, dusted lightly with grey scales (white area usually slightly more extensive and widely dusted with yellow scales in *D. c. satisbona*); distinct subapical yellow spots in spaces 5 and 6 (spots placed further from the wing margin in *D. c. satisbona*); hind wing with basal whitish grey area extending over approximately half the wing, dusted lightly with yellow scales (basal area yellow, occupying less than half the wing in *D. c. satisbona*). Underside: forewing basal area plain white with a scattering of grey or indistinct yellow scales, white patch extending along inner margin almost reaching tornus (white area reduced, with wide, distinct area of pale yellow scales on costal

edge; extending half way to tornus in *D. c. satisbona*); slightly curved series of subapical yellow spots and streaks (variable) (spots often larger, placed further from apex in *D. c. satisbona*); hind wing black, with dusting of yellow scales basally and along inner margin and costa; distinct yellow submarginal spot in space 6 and series of smaller, more linear streaks in spaces 1b–5, 7 (variable in number and extent) (markings also variable, placed further from wing margin in *D. c. satisbona*).

*Diagnosis.* Differences between the three races of *Delias caliban* are relatively minor, but appear constant. Placement (nearer the wing margin) of the yellow subapical and submarginal spots of *D. c. sycorax* serve to separate it from both nominotypical *D. c. caliban* and *D. c. satisbona*. The female of nominotypical *D. c. caliban* has not yet been collected but the extent of the white basal areas on both surfaces of *D. c. sycorax* and, in particular, the lack of upperside yellow suffusion in comparison with the heavily suffused female of *D. c. satisbona* are diagnostic. It will be interesting to see the phenotype of nominotypical *D. c. caliban* in due course.

*Distribution.* The island of Normanby, D'Entrecasteaux group, Papua New Guinea (Milne Bay Province).

*Etymology.* The name *caliban* was presumably taken from the name of the main antagonist in Shakespeare's *The Tempest*, set on a remote island; the unseen Sycorax was the mother of Caliban.

## Discussion

This short paper is an integral part of research into the distribution and systematics of the butterflies of Milne Bay Province islands, Papua New Guinea, carried out by the author between 2010 and 2016. The D'Entrecasteaux are substantial, high islands, close to the New Guinea mainland and, while the butterflies of the islands have been documented elsewhere (*e.g.* Parsons 1998), previous records have mainly been concentrated on lowland localities.

It is interesting to note that the 5<sup>th</sup> Archbold Expedition visited Mount Pabinama in 1956, arriving at a camp site below the summit on 30 April with 43 carriers, but that following a stay of 12 days (Brass 1959) they regarded the mountain as being unsuitable for butterflies: '[on Mount Pabinama] ... insect collecting could only be described as poor ... habitat conditions were unsuitable for most butterflies ...' (Brass 1959: 43).

The author's own experience was quite different; heavy rain was experienced for the first two days and nights but when the sun emerged on the third day butterflies were both diverse and plentiful on and around the summit. This disparity is not surprising; it is not unusual for researchers to experience completely different conditions and species at different times when working in the tropics.



Issues in reaching altitude on all the islands of the D'Entrecasteaux (and on other islands of Milne Bay) include the fact that land ownership on the islands can be complex and that authority must be obtained from relevant landowners before venturing inland. There are few villages any distance from the coast and it is inconceivable that a visitor can gain any height without local assistance.

It should be noted that in recent years a threat has arisen in the islands. The waters around the D'Entrecasteaux have witnessed many acts of piracy and the activities of criminals (euphemistically referred to locally as 'rascals'), largely from the area of West Fergusson, now encompass coastal areas of all the main islands of the D'Entrecasteaux and further afield. Theft of dinghies and powerful outboard motors have enabled criminals to attack coastal trade stores and steal cash and provisions at gunpoint – and in the past two years two policeman have been shot and killed by these gangs. Despite being very careful not to forewarn local people of our arrival, the author came very close to being caught by a group of these criminals when leaving the summit of Pabinama on 3 November 2016; having just left one of the lower camps *en route* for the coast, a group of criminals were seen by our carriers, heading up from the same camp a short time later, having approached from a different part of the island. Plans were altered and instead of an overnight river stopover as planned, we reached the coast as dusk fell and left Normanby early the following morning. Further criminal activity in the area of East Cape at Christmas 2016 made safe dinghy travel between the mainland and the D'Entrecasteaux islands impossible. No doubt these issues will be resolved in due course but, for the moment, the authorities seem unable to stop these activities and further escalation seems inevitable.

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